1: Conzemius M-4, 5 (1921) 1932
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231 sp.), agouti (*Dasyprocta* sp.), deer (*Odocoileus* sp. and *Mazama* sp.), squash or coati (*Nasua narica*), and raccoon (*Procyon lotor*).

Wickham (b: 163; c: 200) even saw a tame otter among the Ulwa of Rio Escondido. The Indian women have great patience in taming young animals and they will suckle them as they would their own children. These animals are generally caught while still very young.

INDIGENOUS BIRDS.—The domestic turkey is now found in almost every hut. Among the other native birds which are usually tamed by the Indians are the following: curassow (*Crax* sp.), guan (*Penelope* sp.), mountain hen (*Tinamus* sp.), muscovy duck (*Cairina moschata*), macaw (*Ara* sp.), parrot (*Chrysotis* sp.), parrakeet (*Conurus* sp.), toucan (*Ramphastos* sp. and *Pteroglossus* sp.).

The birds are taken out of the nest while still young, but old birds are occasionally tamed. When slightly wounded or when shot with a blunt arrow they are carried home and kept for a few days without any food. After that they become generally very docile and are ready to eat the food given to them.

231 NATIVE BEES.—Various species of the native stingless bees are
263 occasionally found in a semidomesticated state around the Indian huts. About a dozen species are found in the country, all belonging to the family of the Meliponidae. The largest of them is about the size of the European bee. The honey cells are circular and the honey is yellow and slightly acidulous in taste; it does not crystallize when kept for some time, as is the case with that of the European bee. It is slightly laxative and is generally diluted with water, either fresh or after having been allowed to ferment. Previous to the introduction
237 of sugar-cane, honey was used to sweeten food. The wax, which is light brown in color, is used as "cement" in the making of arrows, spears, and other implements; in certain regions it is also used for
● 222 lighting purposes. The Indians also collect the honey from the bee nests in the forests and store it in large bamboo joints.

231 DOMESTIC ANIMALS OF FOREIGN ORIGIN.—The most common domes-
177 tic animals are the dog, pig, cattle, and fowl, while the horse, cat, goat, and sheep are rarely seen. All these animals are of foreign origin and have been introduced from the interior of Honduras and Nicaragua. Among the Indians they are known almost invariably by their Spanish or English name.[40] When the Indian family travels all the livestock is taken along.

231 CATTLE.—Cows (M.: *bip*, from the English "beef"; S.: *toro*, from the Spanish *toro* "bull") are owned by many Indians, especially those living in the savannas. They feed on the coarse grass, there being no artificial pastures made by the Indians. The cows are rarely

[40] The Ulwa, however, call the cow and the horse by the native names they apply to deer (*sana*) and tapir (*pamka*), as do a number of other tribes in Central and South America.

1: Conzemius M-4, 5 (1921) 1932
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On the Atlantic slope of Central America this palm is grown as far north as Rio Tinto in Honduras, but on the Pacific side its northern limit is formed by Lake Nicaragua. It is found only in the cultivated state; the palms found occasionally in deserted regions indicate former village sites. A wild variety, bearing inedible small fruits, is found on the Mosquito Coast to the south of Bluefields; it is there known as "pejivalle de monte" or "wild supa."

COCONUT PALM.—The coconut palm (*Cocos nucifera* L.), called *kuku* by both tribes, is found in a semiwild state all along the seashore; some of the inland Indians have also planted a few trees. This palm is not mentioned by the buccaneers who visited the Mosquito Coast, as Exquemelin, Dampier, and Raveneau de Lussan; it was met, however, by M. W. (310). The Indians make little use of the coconut, except that they drink the water and eat the tender kernel of the young nut; very few of them extract the oil from it, as do the Creoles and Black Caribs.

SUGARCANE.—Sugarcane (*Saccharum officinarum* L.; M.: *kayu*, from the Spanish "caña"; S.: *tisnak*) was brought by the Spaniards during the early part of the sixteenth century to the New World, first to the West Indies and later to the mainland.[a] The various buccaneer authors do not say anything of its occurrence among the Miskito. The first mention of this plant on the Mosquito Coast is found by M. W. (310), who states that the Miskito King Jeremy had some in his plantation, but in those days (1699) the Indians did not yet know how to make sugar from the juice. Nowadays they drink the juice of this plant, after having allowed it to ferment; they also boil it into sirup and brown sugar.

CACAO.—Although an indigenous tree, cacao (*Theobroma cacao* L.; M. and S.: *kakau*) is cultivated only by the Ulwa, but in former days it was also grown by the Miskito (M. W.: 308, 310). The Indians also collect the pods from the various varieties of cacao trees which grow wild in shady parts of the forest.

Cacao pataste or "werbra cacao" (*Theobroma bicolor* Humb. and Bonpl.; M.: *uraň;* S.: *kuru*) is cultivated, however, in the neighborhood of the huts.

CACTUS.—Sloane (a: p. LXXVIII) reports that the Miskito cultivated the Opuntia cactus for the breeding of the cochineal insect; this must be a mistake, however, for that industry was limited to the Indian tribes of the Pacific slope and of the interior, particularly in Mexico, Guatemala, Salvador, and Honduras.

FRUIT TREES.—The most common of the indigenous fruit trees, outside of the ones enumerated above, are the following: Pineapples

[a] Hernán Cortés, the great conquistador of Mexico, introduced the plant from Haiti into Honduras (Trujillo) as early as 1526.

1: Conzemius M-4, 5 (1921) 1932
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251 Fish may also be preserved by drying it in the sun, after having cleaned it and rubbed salt into the scraped flanks.

252 262 VEGETABLE FOOD.—Vegetables, such as cassava, sweet potatoes, tania, yams, green bananas, and plantains, are either boiled in water or (occasionally in coconut milk) with meat or fish, or they are roasted in the hot ashes. Cassava prepared by the last-named process is called *bulbul* by the Miskito.

The fruit of the pejivalle palm is also boiled in water, after which the skin is easily removed. Inferior varieties of this fruit are generally mashed and consumed in the shape of a beverage, either soured or fermented.

A sort of bread (M.: *tani;* S.: *dipis*) is also made. Dry maize is ground on the metate with the addition of a little water. It is then wrapped in large bijagua leaves after the manner of the "tamales" of the Ladinos. A few days later when this mass has turned sour it is baked in the embers. The Sumu also bake it occasionally, immediately after grinding the maize, without allowing it to turn sour; it is then known to them by the name *pan* (from the Spanish "pan"). The Ulwa make this bread generally from unripe maize.

The pith or "cabbage" of various palms (*Attalea, Chamaedorea, Euterpe, Iriartea, Oreodoxa*) may be eaten either pickled or cooked; it is slightly bitter in taste. The pith and the small acid fruits of the pingwing or piñuela (*Bromelia pinguin* L.; M.: *ahsi;* S.: *ahsi, wakari*) are also esteemed. In times of scarcity the tender young bamboo shoots are also cooked and eaten.

262 177 824 The leaves of a small wild-growing plant, called cucumber or calaloo (*Phytolacca decandra* L.), are occasionally eaten as "spinach" by the Indians, who have taken this habit from the Creoles and Negroes. The common name "calaloo" for this plant savors of African origin; the Miskito call it *tilba pata* "tapir food." Indians and Ladinos use the leaves sometimes as soap, hence the local Spanish name "jaboncillo."

222 WILD FRUITS.—The Indians also collect the fruits of a number of wild-growing trees, of which the following are the most important for food: Hog plums (*Spondias lutea* L.; M.: *pahara;* S.: *walak*), nances or nancitos (*Byrsonima crassifolia* H. B. K.; M. and S.: *krabo, karabo*), zapotes or mammee apples (*Lucuma mammosa* Gaertn.; M.: *kuri;* S.: *sipul*), sapodillas or naseberries (*Sapota zapotilla* Coville; M.: *iban;* S.: *iban, sabakan*), guapinol or locust tree (*Hymenaea courbaril* L.; M.: *lāna, laka;* S.: *tipi*), several species of dwarf guavas (*Psidium* sp.; M.: *kru;* S.: *kuru, arayañ*), breadnut tree (*Helicostylis ojoche* K. Sch.; M. and S.: *pisba, tisba*), monkey apple (*Moquilea platypus* Hemsl.; M.: *puramāra;* S.: *lasat*), beach or sea grape (*Coccoloba uvifera* L.; M. and S.: *vaham*), icaco or coco plum (*Chrysobalanus icaco* L.; M. and S.: *tawa*) and several species of granadillas or fruits of passion

1: Conzemius M-4, 5 (1921) 1932
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flowers (*Passiflora* sp.; M.: *drap, tutbuñ;* S.: *wahluluñ, suñsuñ, wahamtari*).

ENSILAGE.—A sort of ensilage is occasionally made by the Miskito of various foodstuffs, as green bananas or plantains and pejivalles, and by the Sumu of boiled maize. Such food is known by the name *bisbaya;* it may be kept for six months, or even longer.

Green bananas or plantains are peeled and buried in the ground upon a layer of large bijagua leaves and then covered up with another layer of leaves and earth. The Indians claim that no worm will get into the food when the work has been done carefully. The whole is not uncovered until required for food. The fruit retains its natural whitish color, but will turn black immediately upon exposure to the air. *Bisbaya* is consumed either in the shape of a beverage, after being boiled with water, or it is baked between leaves into a sort of bread (M.: *bisbaya tanka;* S.: *bisbaya pañni*). [46]

The fruit of the pejivalle palm, which has been stored in this manner, is always taken in the shape of a drink. It is boiled again, when taken out of the soil, mashed, strained, and mixed with wabul.

The Sumu rarely make use of this manner of preserving food, except for maize. The latter is steeped in lye of wood ashes to remove the outer skin, and then buried for a few months. After being taken out of the ground it is preserved in baskets over the smoke until needed as food. These various kinds of *bisbaya* all have a very offensive odor, which may be smelled from a great distance.

Another manner of ensiling is practiced more frequently by the Sumu. Maize or bananas from which the skin has been removed are placed in running water until they partially ferment, and are then dried in the sun. For this purpose they are made into large leaf parcels and deposited in the neighboring creek. This sort of food (M. and S.: *kwakwa, takra, tulis*) has also a somewhat disagreeable odor.

FOOD ADJUNCTS: NARCOTICS, STIMULANTS, EXCITANTS, ETC.

TOBACCO (*Nicotiana tabacum* L.).—The sukya uses tobacco as a narcotic in order to throw himself into a condition of wild ecstasy; during such an abnormal conditon he is supposed to enter into relations with the spirits. He also blows tobacco smoke over the sick persons in order to purify them.

[46] Bell (b: 27) states that the Creoles of Bluefields made plantains into "*foofoo,*" that is, cut up, put into large baskets, and buried in the earth until partially rotten, then dried in the sun and made into flour. The name "*foofoo,*" corrupted by the Miskito into *pupu,* is now applied to green bananas or plantains which have been cooked, mashed, and formed into the shape of tamales.

1: Conzemius M-4, 5 (1921) 1932
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The eating of earth (M.: *taûka;* S.: *sdû*), clay (M.: *slâûbla;* S.: *sdû*), sand (M.: *dûya;* S.: *kdûlmak*), and charcoal (M.: *kwasko, tmasko;* S.: *kusmak*) is very common among women and children.

NONFERMENTED BEVERAGES

DRINKING WATER.—The whole country is well watered and the Indians obtain their drinking water from the running streams on the banks of which their settlements are generally situated. Wells are also dug by those living near the sea.

WATER LIANAS.—Several varieties of water lianas, varying in size from 3 to 5 inches, can be found throughout the forest. When the stem is merely cut through only a few drops of water will issue; the vine must then be severed immediately about 2 or 3 feet farther down, whereupon a continual stream of water will flow, quite sufficient to quench the thirst of a person. The Indian holds the severed part of the stem in a vertical position, allowing the sap to run directly into the mouth. The vine must be cut above first, otherwise the sap will ascend so rapidly that hardly any will be obtained.

HONEY.—The Indians are very fond of the honey (M.: *nas[illegible] amak*) from the various species of wild, stingless bees which make their nests in hollow trees. The entrance to the nest is easily ascertained by watching the little bees flying about. The Indians either climb or fell the tree in order to get possession of the honey. The latter is always taken as a beverage, after being mixed with water, but even in its natural state it is not viscid, but almost as fluid as water. It has a subacid, highly fragrant taste. The Indians, while away from home, may make a meal of the contents of such a bee nest, but the average foreigner does not care much for it, and finds it greatly inferior to that of the European domesticated bee. The natives collect in bamboo joints what they are unable to consume immediately to take home to their family.

MILK.—The consumption of cow's milk is not general. When I inquired the reason from some Sumu of the upper Rio Waspuk they answered that they are not the descendants of cows, to drink their milk.

BANANAS AND PLANTAINS.—A great variety of nourishing drinks of vegetable origin are prepared by the Indians under consideration. Bananas are consumed largely in the shape of a pop, known locally by the name "wabul." The bananas for this purpose are used generally in the green state, before their contained starch has turned into sugar. They are peeled and cooked in an iron pot. Then the water is poured off and the bananas are thoroughly mashed in the same pot with the aid of a short wooden stick. During this process cold water is added little by little, and the whole is well stirred. No salt

3: Pijoan D-5 (ca. 1945) 1946
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262 The Indians also secure honey from wild honey bees. In the Coco
122 territory there are various species of stingless bees *(Meliponidae)*. The honey cells are circular and the honey is yellow and slightly acid in taste, it does not crystallize when kept for sometime. Previous to the introduction of sugar cane the honey was used to sweeten food.

The most important food of the Miskito Indian is the banana, even though it is not indigenous to America. As such this is one of the few examples where a food originally foreign to a people was immediately accepted an chronically utilized. On the other hand the use of cereals so common throughout the Americas, is infrequent. The reason for this is that cereals are difficult to grow in this territory. The numerous insects which attack certain types of vegetable or plant life restricts agricultural enterprise. Furthermore there appears to be no need of cereals in the diet. Beans have recently been introduced and in some communities they have been raised for eating purposes.

Oils are easily prepared from coconuts or varieties of nuts. These are crushed and placed in boiling water, and in due course the oil rises to the surface and is skimmed off.

262 It can be said that the Miskito Indians living as they are, unmo-
177 lested, by the banks of rivers and streams secure enough wild fruits, vegetables, fish and game to adequately supply the yearly food. To this is added small agricultural projects of their own, such as banana plantations, citrus fruits, etc. When these Indians become sequestered in larger villages or are removed from their community to work for mines, rubber collection, or as laborers for fruit companies, the dietary deteriorates. To secure food under these new circumstances they need money, a substance which is easily expendable and does not represent a material which may be needed in the future. The Rubber Development Corporation has had in many instances fed laborers on foreign foods which have not always agreed with or been agreeable to workers.

NUTRITIONAL EVALUATION OF THE DIET

121 The evaluation of the nutritional status of individuals from any single examination of their diet is difficult if not impossible. There are widely divergent views regarding the needs of the body, as to the extent and character of the food requirements, of the relative merits of various foods and as to the degree and frequency of intake of the nutritional components. A survey of dietary intakes will often make one suspect a deficiency and may warn the investigator what to seek for In the end clinical appraisal is the only satisfactory method. There is